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ABSTRACT

This report describes "AppleLink," a communications system used by Apple employees, which combines an electronic mail system, bulletin boards, and databases. The development of AppleLink from the pilot project stage is described, and the basic functions and features of the system are detailed. Suggestions are made for the use of a similar system in education agencies, based on personal experience with delays and lost paperwork in the California Department of Education. Twelve figures provide examples of computer displays at various points in system use. (EW)

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Communications: How AppleLink Improved Apple's Information Flow

Stacey Bressler

IR013562

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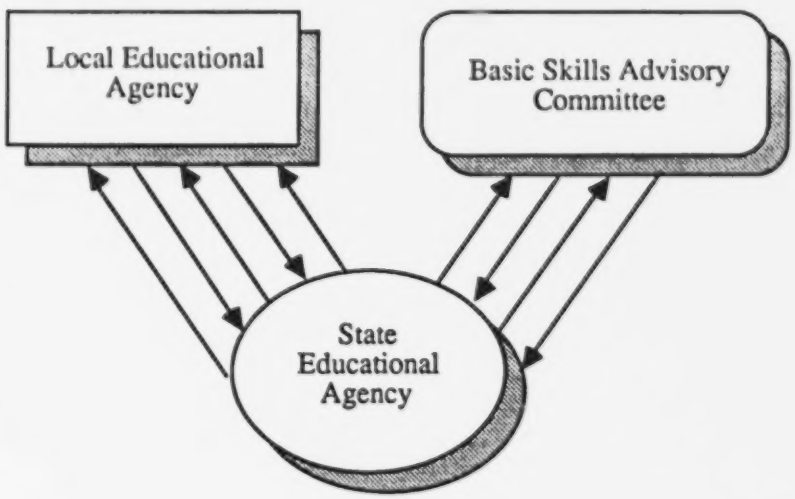
Whenever people and information come together there is a potential for communication bottlenecks; and some of the worst possible communication bottlenecks seem to occur in education—perhaps because there is so much information to distribute to so many people!

Two examples of communications "snafus" will be forever etched in my memory. Both occurred at the Department of Education in the state where I resided before coming to California.

The first example involved the process for obtaining approval for a school system's Basic Skills Improvement Plan. Essentially the procedure was that each Local Educational Agency (LEA) received guidelines from the State Educational Agency (SEA). The LEA then submitted a plan, which was read by members of the State Basic Skills Advisory Committee, amended (if necessary) by the LEA, and finally approved by the SEA. While this may sound straightforward, what actually occurred was as follows:



Step 1: The SEA sent guidelines to the LEA.
Step 2: The LEA sent a plan to the SEA.
Step 3: The SEA sent the plan to the Basic Skills Advisory Committee.
Step 4: The Advisory Committee sent the plan back to the SEA with suggestions.
Step 5: The SEA sent the plan and suggestions to the LEA.
Step 6: The LEA sent the amended plan to the SEA.
Step 7: The SEA sent the amended plan to the Basic Skills Advisory Committee.
Step 8: The Advisory Committee sent the amended and approved plan back to the SEA.
Step 9: The SEA notified the LEA of plan approval.

This procedure became increasingly complex if the plan needed more than one round of revision, or the LEA did not get all the necessary signatures, or the advisory committee reader took the plan away with him/her on vacation, or any of a hundred other disasters occurred. Since all communications were done by mail, the average approval process took three to six months. Imagine repeating this process for more than 350 LEAs!

But even a Basic Skills plan approval process could not compare with the following (true) story involving a woman who needed accreditation as a school librarian.

> In May the woman, who was already a certified teacher in another state, completed her master's degree in library science and sent a request for information to the Teacher Certification Bureau.
>
> In July she received a letter from the Teacher Certification Bureau that included the requirements for the certification she was seeking. She immediately sent in the necessary paperwork.
>
> In August she was offered a school librarian position, contingent upon receiving state certification. She tried telephoning the Teacher Certification Bureau, but was greeted by a recorded announcement explaining that the bureau was not able to accept phone calls because of the volume and that all communications should be by mail. In desperation, she sent off a telegram requesting immediate action on her certification request.

In September she received a temporary certification (supposedly good for six months) and an appointment for an interview in October. While driving to her appointment in October, she was delayed by a major traffic jam and arrived at the Teacher Certification Bureau five minutes after the offices had closed for the day. She tried to telephone the next morning to explain why she had missed her appointment, but she once again encountered the recorded message. She sent a telegram.

In November she received a letter with a new appointment date in late January. In January she finally had a face-to-face meeting and was informed that one of her undergraduate courses in education might not be appropriate for meeting certification requirements. She agreed to supply additional information about the course in question.

In February she sent in the required information to the Teacher Certification Bureau by registered letter.

In March she received notification from the Teacher Certification Bureau that the requirements for certification as a school librarian were being amended and that only those having valid certification by the following September would be grandfathered. She answered this with a postcard reminding the bureau that she was still awaiting her certification approval.

On the last day of April she received a devastating letter from the Teacher Certification Bureau that her paperwork had been lost. She was instructed to supply new copies of the information as soon as possible. Feeling pleased that she had made xerox copies of everything she had submitted, she promptly sent in the copies.

In June she was informed that xerox copies were not acceptable, and that she would need signed originals of the transcripts from her undergraduate and graduate education. Fortunately she was able to obtain this paperwork quickly (the schools were within driving distance) and the new paperwork was submitted before the end of July. In the same letter, she requested an appointment to expedite receipt of her certification.

In early August she received a letter indicating an appointment date late August. At this appointment she was told by a new administrato that more information would be needed about one of her graduate courses before certification would be granted.

The woman finally received her certification in November—two months after the deadline for being grandfathered under the existing certification requirements. Not only had it taken 18 months to recei certification, but she now had 34 months to take two courses and reapply for certification under the new program!

In 1982 when I came to Apple, I thought I had left this sort of communication problem behind me. While nothing can ever compare to the information "flow" of the State Department of Education, I learned that even one of America's fastest-growing companies can have its share of communication problems.

Apple creates new programs, promotions, policies, products, and pricing that need to be communicated on a regular basis to field salespeople, managers, and a nationwide network of independent dealers. And until quite recently, most of this information was communicated via telephone, U.S. Postal Service, or Federal Express. This led to critical delays and miscommunication.

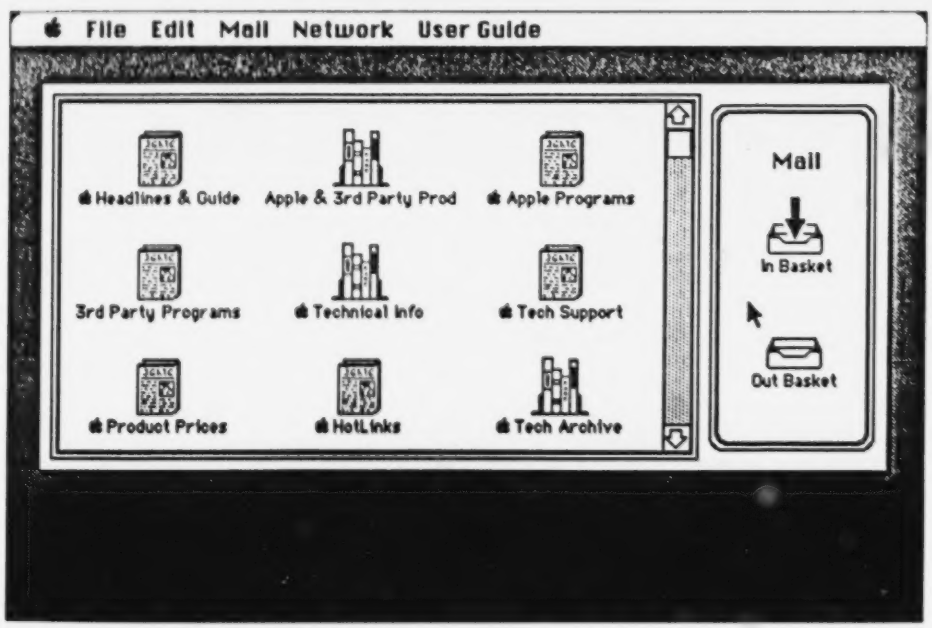
Then came AppleLink. In 1984, Apple and the General Electric Information Services Company (GEISCO) signed an agreement to develop the AppleLink communications system. The system was designed to provide technical support and program information to Apple's dealers and field sales personnel and to allow these people to be up and running on the system in minutes *with little or no additional training!*

Late in the spring of 1985, AppleLink went into a pilot program. Before the end of that summer, we knew that our system had surpassed our expectations. Not only did the system greatly improve technical support, but the electronic mail component completely revolutionized the way we conduct our business. Field personnel found that being freed from the constraints of time zone differences and "telephone tag" increased communications with home office personnel and made them far more productive. The psychological effect of knowing that the home office was only a link away was a powerful motivator for both Apple employees and dealers.

At present approximately 10,000 people are using AppleLink's electronic mail, bulletin boards, and data base. The real beauty of the system is that it is extremely powerful but unbelievably simple to use.

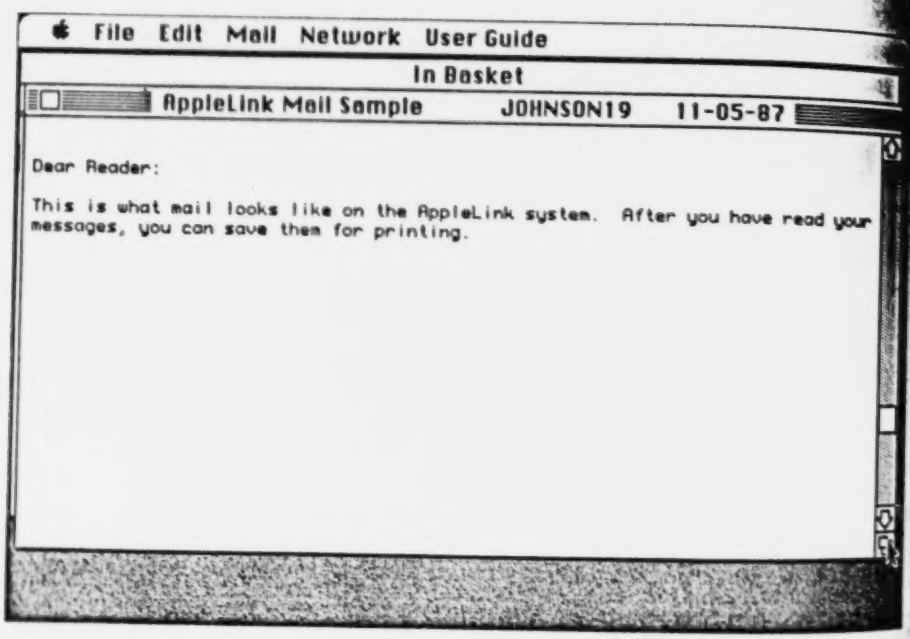
The following pages show how AppleLink looks to the user. The first screen shows the AppleLink desktop, which contains mail, bulletin boards, and libraries (see Figure 1). Notice that the Mail In Basket has an arrow, indicating that there are messages waiting to be read.

Figure 1



To read the mail in the box, the user points to the In Basket with the curso and clicks twice on the mouse button. The screen shows a list of incoming mail. The user points to the message he or she wants to read and clicks twi on the mouse button. The message appears, as illustrated in Figure 2.

Figure 2


File Edit Mail Network User Guide
In Basket
AppleLink Mail Sample JOHNSON19 11-05-87
Dear Reader:
This is what mail looks like on the AppleLink system. After you have read your messages, you can save them for printing.

If an Alert icon appears in the list of mail, this indicates that AppleLink contains an important, time-sensitive message. To read the Alert message, the user points to the icon and clicks twice on the mouse button.

Bulletin boards, such as Headlines & Guide (Figure 3), may contain different types of information. Headlines & Guide includes documents (Figure 4) and folders containing related documents (Figure 5). As you would expect, information is read by pointing the cursor to the icon of the document or folder you wish to open and then double-clicking.

Figure 3

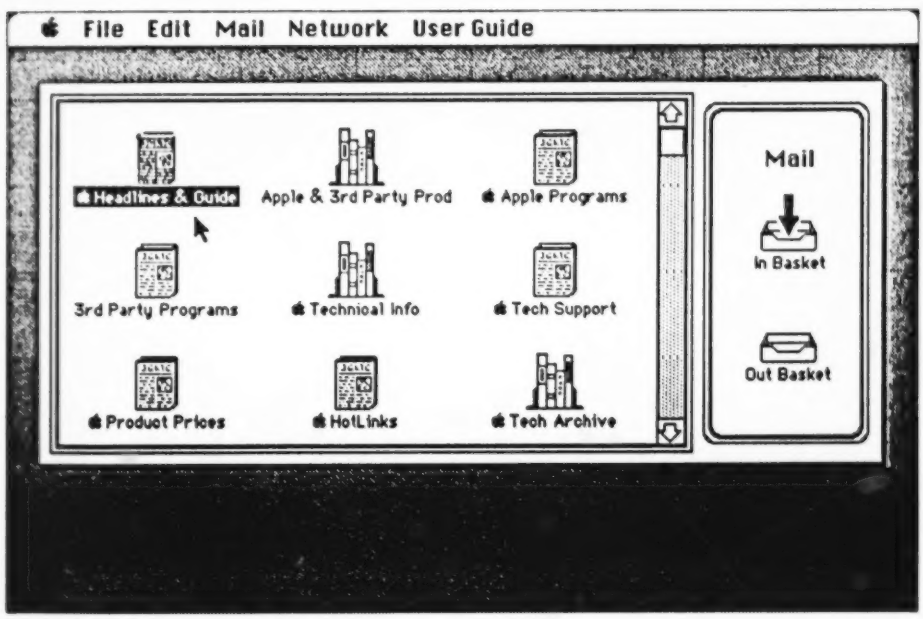


Figure 4

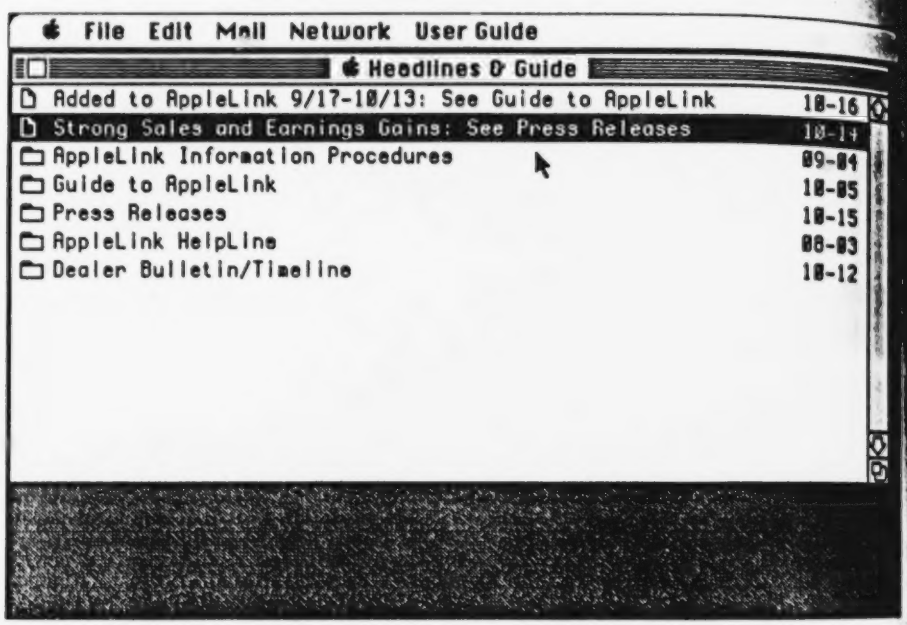
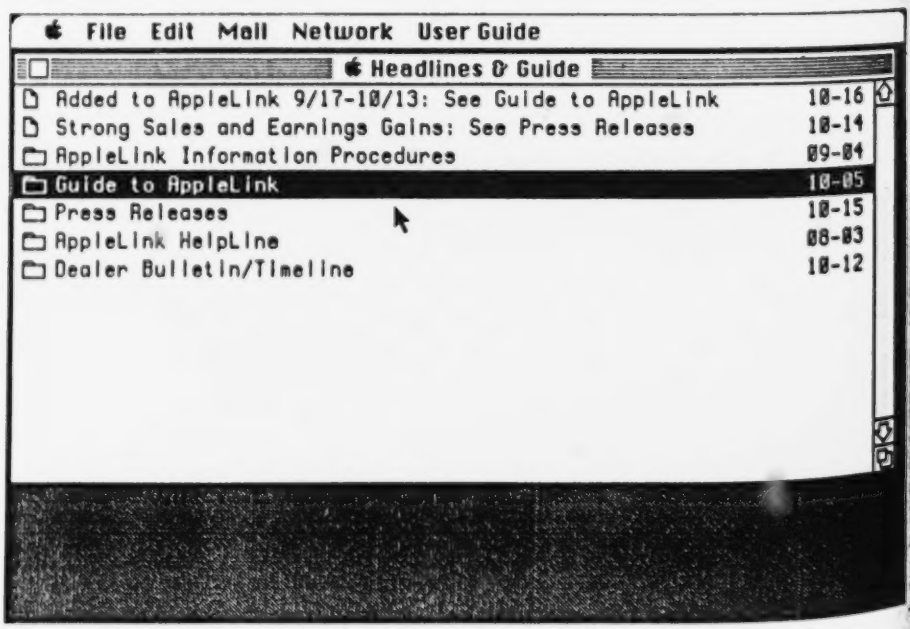

File Edit Mail Network User Guide
Headlines & Guide
Added to AppleLink 9/17-10/13: See Guide to AppleLink 10-16
Strong Sales and Earnings Gains: See Press Releases 10-14
AppleLink Information Procedures 09-04
Guide to AppleLink 10-05
Press Releases 10-15
AppleLink HelpLine 08-03
Dealer Bulletin/Timeline 10-12

Figure 5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Headlines & Guide
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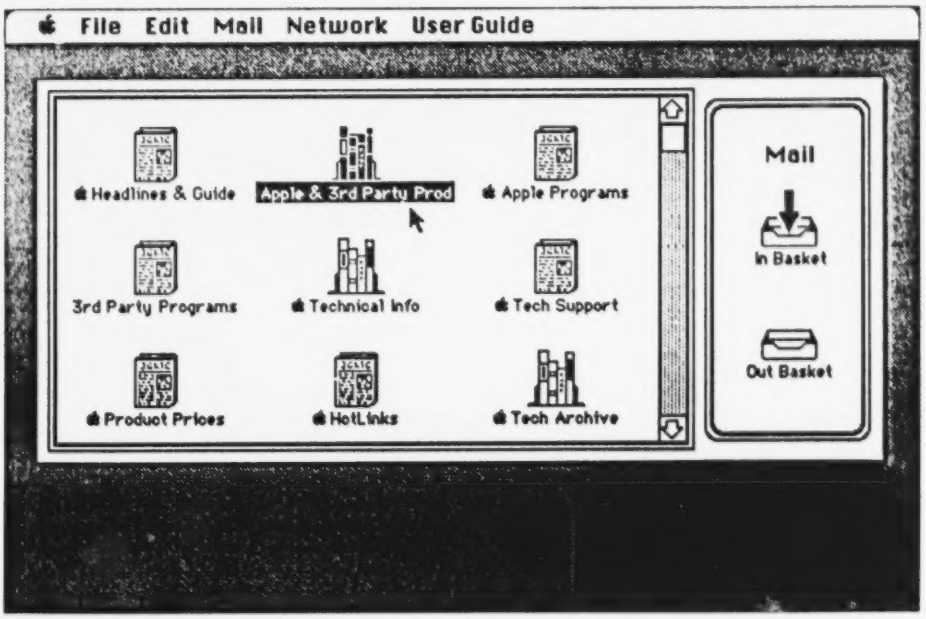
Strong Sales and Earnings Gains: See Press Releases 10-14
AppleLink Information Procedures 09-04
Guide to AppleLink 10-05
Press Releases 10-15
AppleLink HelpLine 08-03
Dealer Bulletin/Timeline 10-12

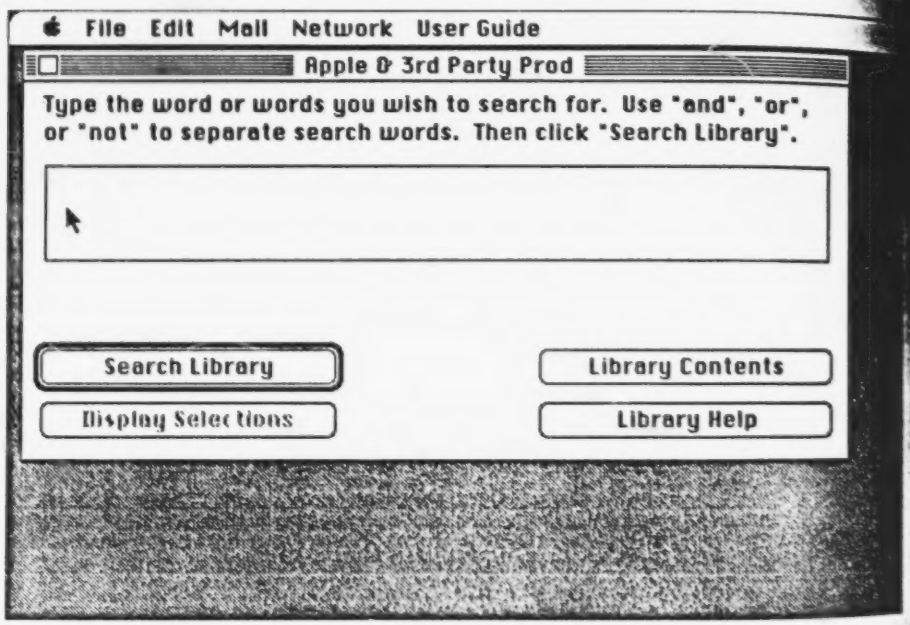
One of the most important features of AppleLink is access to Apple's technical and marketing data base, which is done through the libraries. In the examples that follow, the user is seeking information on communications software for the Macintosh. First the user clicks twice on a library icon—in this example, Apple & 3rd Party Products (Figure 6).

Figure 6

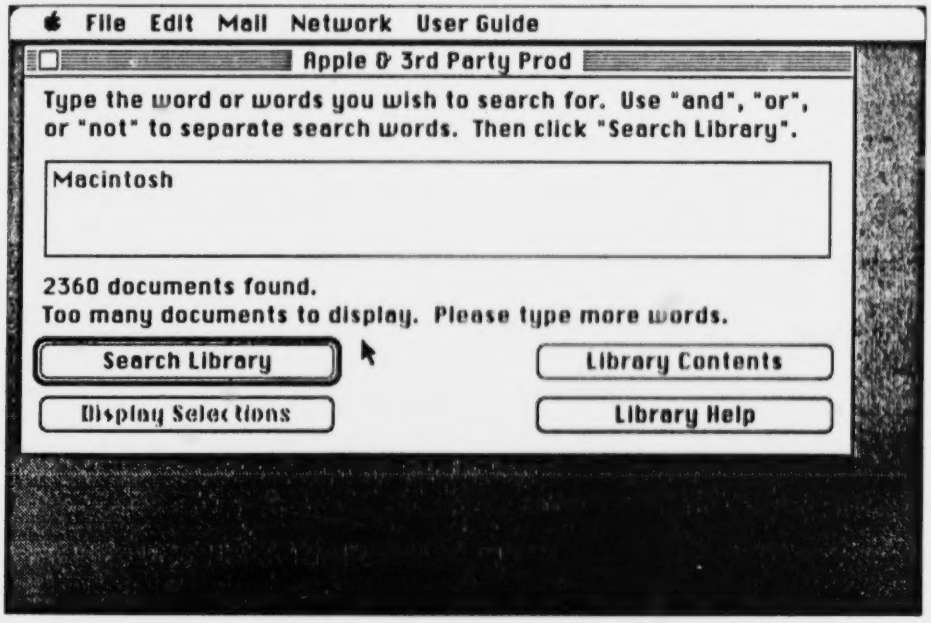


The user is then instructed to enter words for a search (Figure 7). Since the data base is able to search *every word in every document*, the user does not have to remember special titles or descriptors.

Figure 7


File Edit Mail Network User Guide
Apple & 3rd Party Prod
Type the word or words you wish to search for. Use "and", "or", or "not" to separate search words. Then click "Search Library".
Search Library
Library Contents
Display Selections
Library Help

In our example, the user types the word *Macintosh*. The search is conducted, and the screen shows that the name *Macintosh* is included in 2360 documents. The user is instructed to qualify the search further (Figure 8).


File Edit Mail Network User Guide
Apple & 3rd Party Prod
Type the word or words you wish to search for. Use "and", "or", or "not" to separate search words. Then click "Search Library".
Macintosh
2360 documents found.
Too many documents to display. Please type more words.
Search Library
Library Contents
Display Selections
Library Help

Figures 9 and 10 illustrate how easily options are narrowed in locating information. First the user limits the search to "Macintosh and Modem," and then to "Macintosh and Modem and Software."

Figure 9

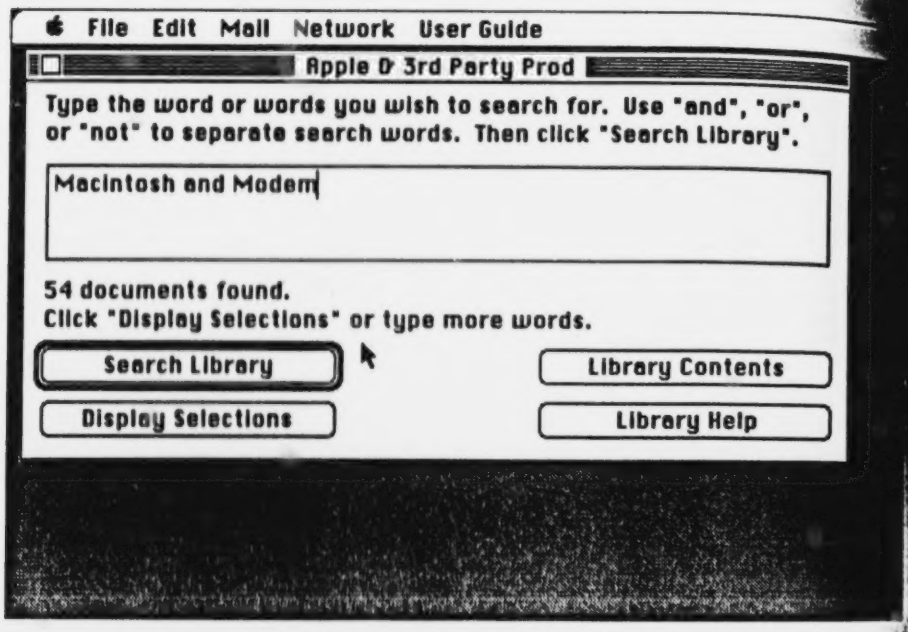
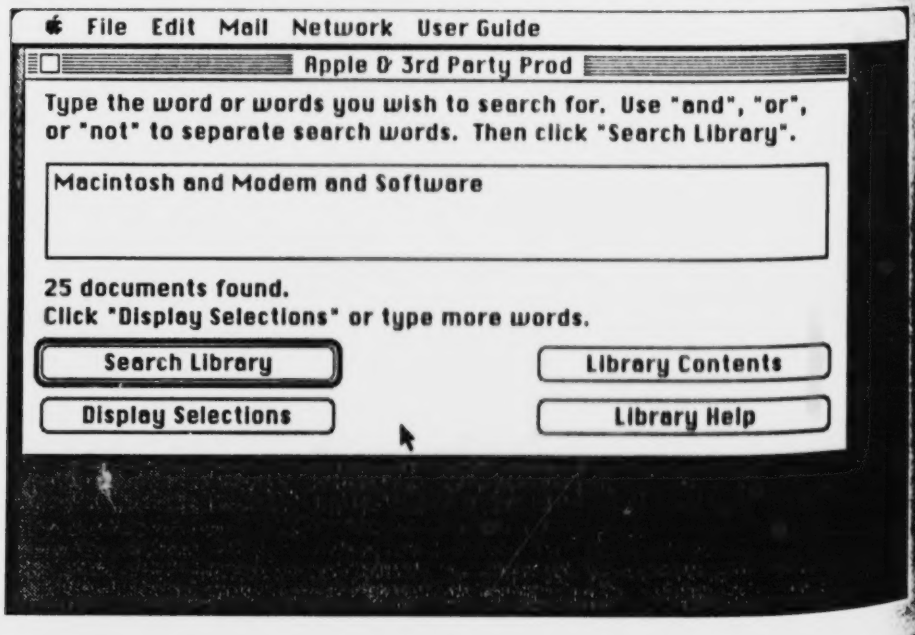

File Edit Mail Network User Guide
Apple & 3rd Party Prod
Type the word or words you wish to search for. Use "and", "or", or "not" to separate search words. Then click "Search Library".
Macintosh and Modem
54 documents found.
Click "Display Selections" or type more words.
Search Library
Library Contents
Display Selections
Library Help

Figure 10


File Edit Mail Network User Guide
Apple & 3rd Party Prod
Type the word or words you wish to search for. Use "and", "or", or "not" to separate search words. Then click "Search Library".
Macintosh and Modem and Software
25 documents found.
Click "Display Selections" or type more words.
Search Library
Library Contents
Display Selections
Library Help

Once a reasonable number of documents is offered, the user points to "Display Selections" and double-clicks to see a listing of the titles (Figure 11). The selection process is repeated to open the selected document (Figure 12).

Figure 11

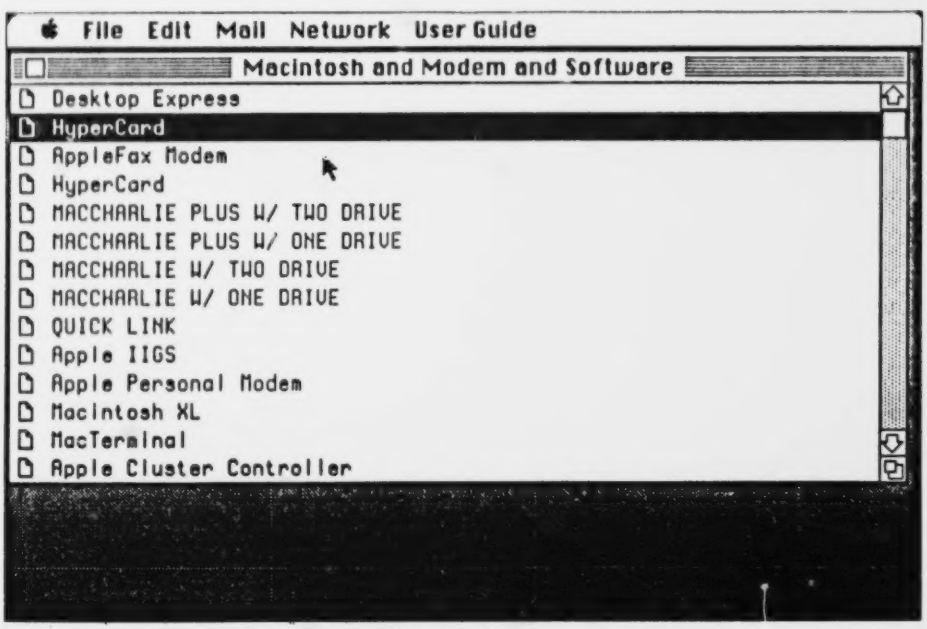
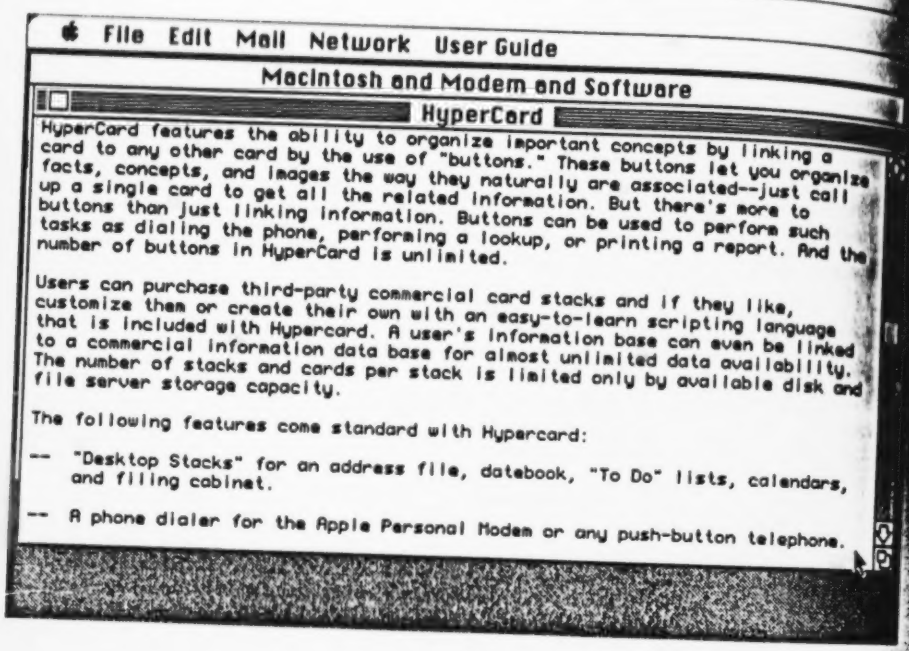


Figure 12


File Edit Mail Network User Guide
Macintosh and Modem and Software
HyperCard
HyperCard features the ability to organize important concepts by linking a card to any other card by the use of "buttons." These buttons let you organize facts, concepts, and images the way they naturally are associated--just call up a single card to get all the related information. But there's more to buttons than just linking information. Buttons can be used to perform such tasks as dialing the phone, performing a lookup, or printing a report. And the number of buttons in HyperCard is unlimited.
Users can purchase third-party commercial card stacks and if they like, customize them or create their own with an easy-to-learn scripting language that is included with Hypercard. A user's information base can even be linked to a commercial information data base for almost unlimited data availability. The number of stacks and cards per stack is limited only by available disk and file server storage capacity.
The following features come standard with Hypercard:
-- "Desktop Stacks" for an address file, datebook, "To Do" lists, calendars, and filing cabinet.
-- A phone dialer for the Apple Personal Modem or any push-button telephone.

The AppleLink system really has helped Apple employees and dealers navigate their way through a sea of information. AppleLink's functionality and ease of use have made the system indispensable.

I often think about how much AppleLink could do for education.

If the Department of Education I mentioned earlier had only had AppleLink, the Basic Skills approval process could have been accomplished in at least one-third less time through the electronic transfer of documents. And if teacher certification requirements and questions could be accessed on-line, the process might even work efficiently.

Apple is interested in the application of a similar system in education. Through the Education Advisory Council and other forums, we hope to learn how the process of education can be made most efficient through the use of electronic networking.

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Stacey Bressler

Stacey Bressler is currently manager of customer support programs with NeXt, Inc. Previously she worked as project manager in strategic sales for Apple Computer, where she participated in the design and implementation of the Apple University Consortium.

Before her experience at Apple, Ms. Bressler served as coordinator of instructional technology and basic skills for the Massachusetts Department of Education, and as coordinator of training for Massachusetts Educational Television.

As a consultant in instructional technology, she worked with WNET in New York, WGBH Radio in Boston, the Gutman Library of Harvard University, and the Public Broadcasting Service in Washington, D.C., among others. She holds an M.S. from Simmons College Graduate School of Library and Information Science.